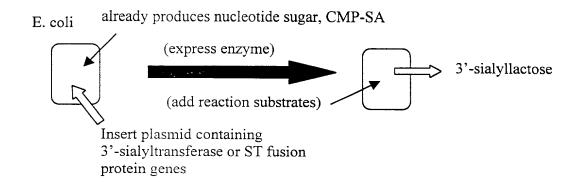
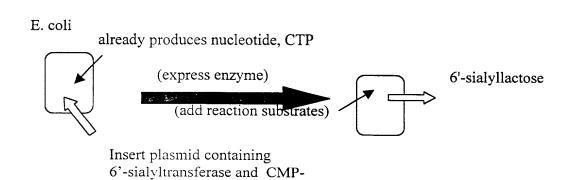
# Figure 1A



# Figure 1B



SA synthetase genes

protein

Figure 2

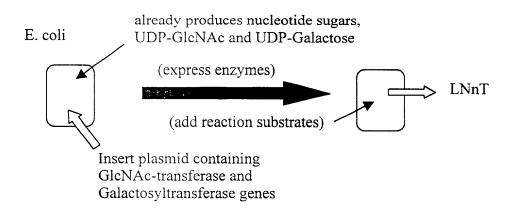
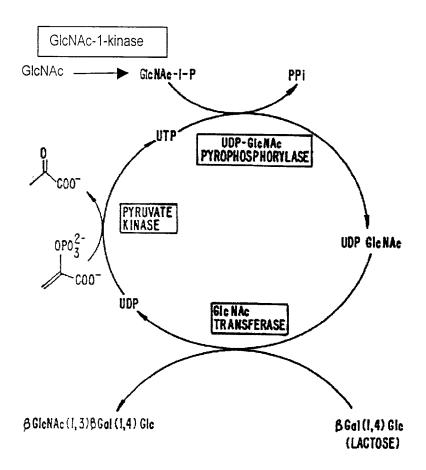
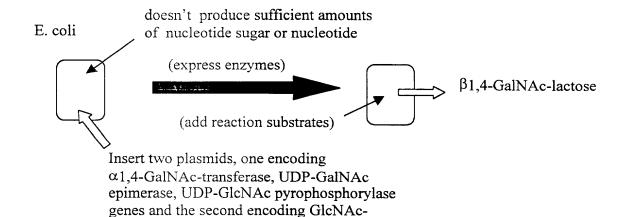


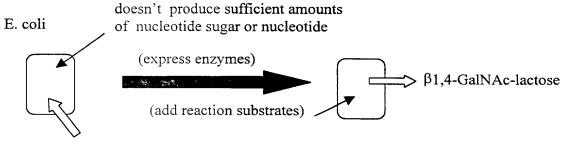
Figure 3



### Figure 4A



# Figure 4B

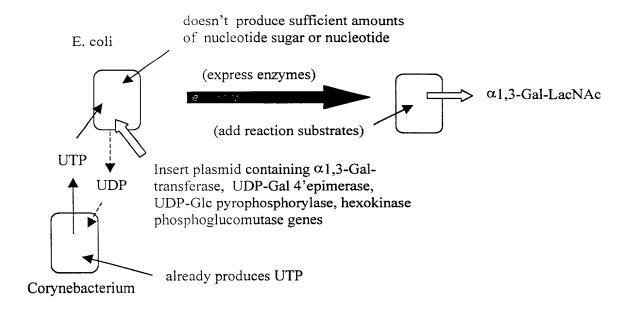


Insert plasmid containing beta1,4-GalNActransferase, UDP-GalNAc pyrophosphorylase, GlcNAc 1-kinase, polyphosphate kinase and pyruvate kinase genes

1-kinase, polyphosphate kinase and pyruvate

kinase genes)

## Figure 5A



#### Figure 5B

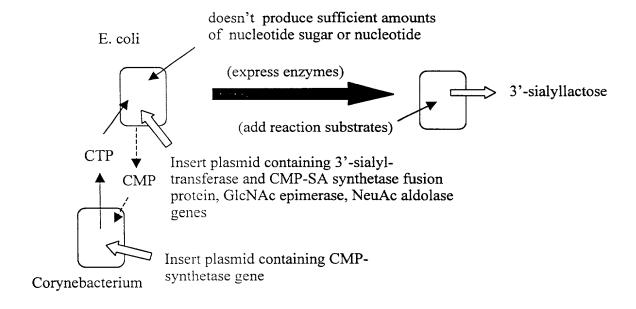
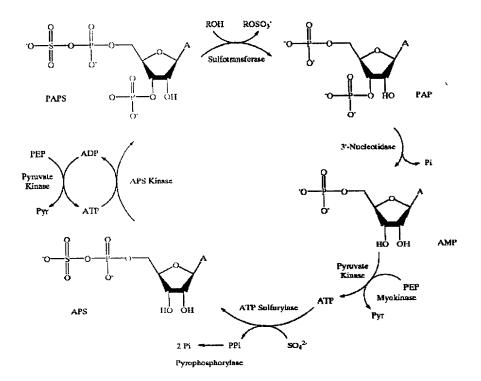
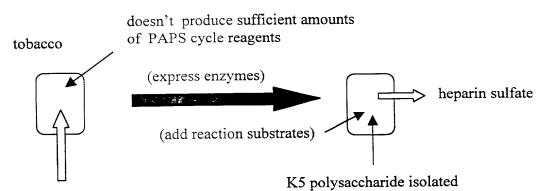


Figure 6



# Figure 7A



Insert the 3'-sulfotransferase, 6'-sulfotransferase, 2'-sulfotransferase, Iduronyl- epimerase, Iduronyl-N-sulfotransferase, and PAPS cycle enzyme genes into genome

# Figure 7B

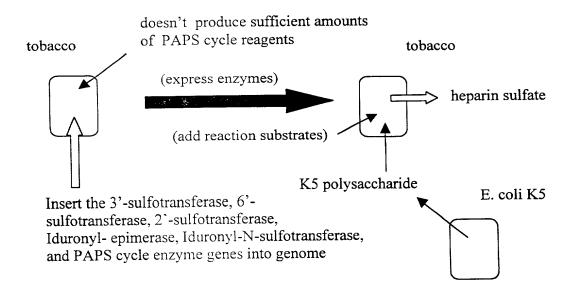
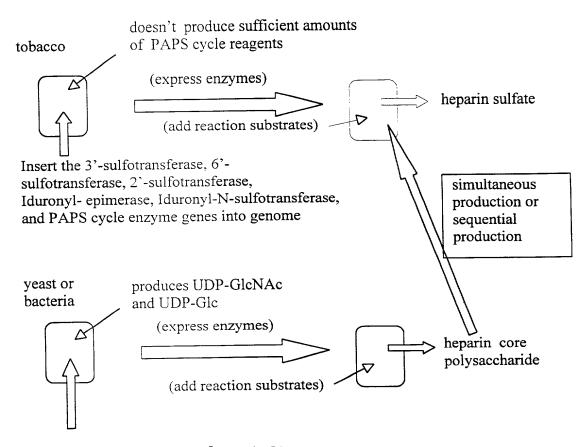
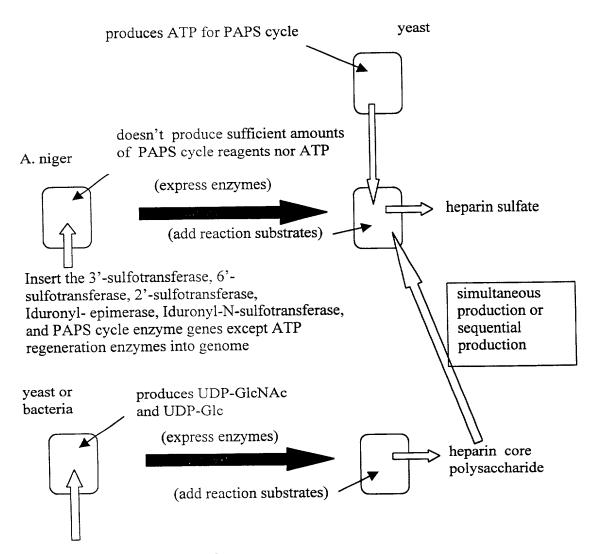


Figure 7C



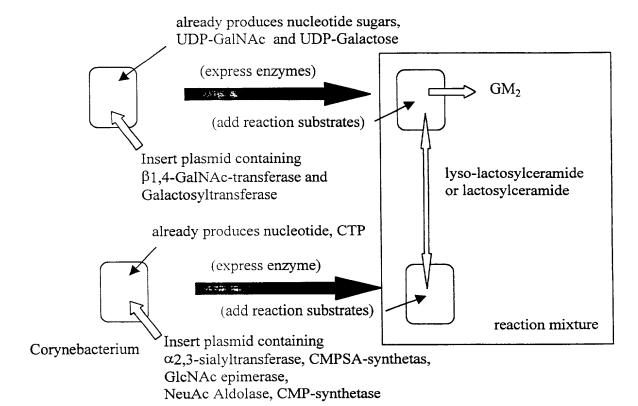
Insert plasmid containing  $\beta$ 1,4-GlcNAc transferase,  $\beta$ 1,4-glucuronyltransferase and UDP-Glc dehydrogenase genes

Figure 7D



Insert plasmid containing  $\beta$ 1,4-GlcNAc transferase,  $\beta$ 1,4-glucuronyltransferase and UDP-Glc dehydrogenase genes

Figure 8



# Figure 9

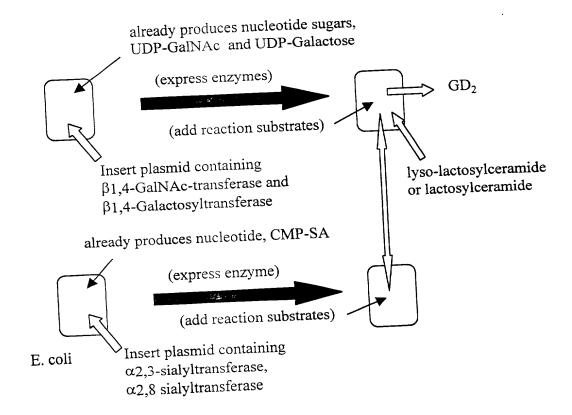
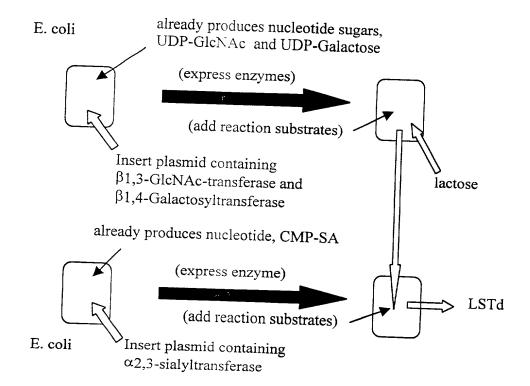
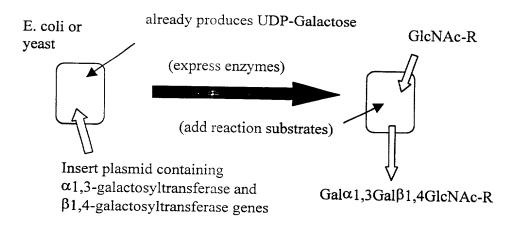


Figure 10



# Figure 11A



### Figure 11B

